EXHIBIT C

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(54) **METHOD AND SYSTEM FOR ON DEMAND DOWNLOADING OF MODULE TO ENABLE REMOTE CONTROL OF AN APPLICATION PROGRAM OVER A NETWORK**

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(52) **U.S. Cl.** **709/208**; 709/229

(58) **Field of Classification Search** ..... None
See application file for complete search history.

(56) **References Cited**

PUBLICATIONS

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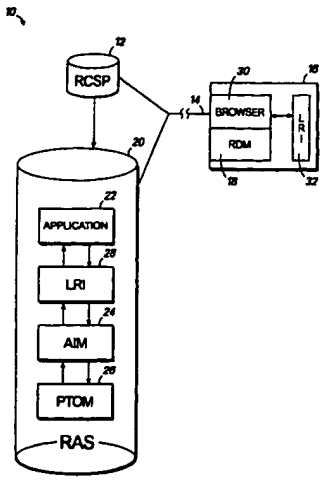
Primary Examiner—Woo H. Choi

(57) **ABSTRACT**

The system and method is disclosed for remotely controlling an application program over a network. The system includes an application interception module and remote display module. The remote display module is transported across the network and executed on the user system in response to a user's request to provide on-demand remote control of an application program. The application interception module captures an I/O stream generated by an application program, converts it to remote control protocol messages and transports them across a network to the remote display module executing in the user system. The remote display module converts the remote control protocol messages to system calls compatible with the operating system environment for the users computer. Likewise, the remote display module converts system calls to the local resource interface in the user's computer to remote control protocol messages which are transported across the network to the application interception module. The application interception module interface converts the remote control protocol messages to system calls for the application program. In this manner, output from the application program is provided to the user's computer and input actions at the user's computer are provided to the application program. Preferably, the remote display modules and application programs are presented through HTTP servers over a network to a user's system which uses a browser having a JAVA interpreter to execute the remote display module and convert the remote control protocol messages.



EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the original patent but was deleted by the reissue patent; matter printed in italics was added by the reissue patent. Matter enclosed in heavy double brackets [[ ]] appeared in the reissue patent but is deleted by this reexamination certificate; matter printed in boldface is added by this reexamination certificate.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **11**, **15**, **18**, **21**, **26**, **31**, **36** and **41** are determined to be patentable as amended.

Claims **12–14**, **16**, **17**, **19**, **20**, **22–25**, **27–30**, **32–35**, **37–40** and **42–45**, dependent on an amended claim, are determined to be patentable.

New claims **46–72** are added and determined to be patentable.

Claims **1–10** were not reexamined.

11. A method for providing on demand remote control of an application program comprising the steps of:

transporting a remote display module from a first computer to a second computer;

executing said remote display module at said second computer to establish communication between a user interface to computer resources at said second computer and said first computer through said remote display module; **[[**and**]]**

launching an application program and application interception module at said first computer to establish communication between said application interception module and said remote display module whereby input/output (I/O) messages are communicated between said application program and said user interface at said second **[[**computer**]] computer**;

converting I/O messages from said user interface to remote control protocol messages for transmission to said application interception module; and

converting remote control protocol messages from said remote display module to I/O messages for said application program.

15. **[[**The method of claim **11** further comprising the steps of:**]] A method for providing on demand remote control of an application program comprising the steps of:**

transporting a remote display module from a first computer to a second computer;

executing said remote display module at said second computer to establish communication between a user interface to computer resources at said second computer and said first computer through said remote display module;

launching an application program and application interception module at said first computer to establish communication between said application interception module and said remote display module whereby input/output (I/O) messages are communicated between said application program and said user interface at said second computer;

converting I/O messages from said application program to remote control protocol messages for transmission to said remote display module at said second computer; and

converting remote control protocol messages received from said application interception module to I/O messages for said user interface at said second computer.

18. A method for providing on demand remote control of an application program, comprising the steps of:

determining that a user at a first computer system desires remote control over an application at a second computer system;

transporting over said network a remote control module to said **[**second**]** ***first*** computer when demanded by said user, said remote control module enabling said first and second computer system to communicate remotely without pre-installing remote control software at said **[**second**]** *first* computer prior to opening a communication session between the first and second computer; and

executing said remote control module at said **[**second**]** *first* computer to establish a remote control communication *comprising input-output communications* between a user interface at said first computer and an application at said second computer **without installing remote control software on the first computer.**

21. A method for providing on demand remote control of an application, comprising the steps of:

receiving a demand that a user at a first computer desires remote control over an application at a second computer;

in response to the demand, transmitting a remote control module to the first computer over a network,

executing said remote control module at said first computer to establish a remote control communication comprising input-output communications between a user interface at said first computer and an application at said second computer without installing remote control software on the first computer; *and*

the remote control module enabling input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module.

26. A method for providing on demand remote control of an application, comprising the steps of:

transmitting from a first computer a demand indicating that a user at the first computer desires remote control over an application at a second computer;

in response to the demand, the first computer receiving a remote control module over a network;

the remote control module executing on the first computer to enable input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module; and establishing a communication during which the first computer remotely controls the application running on the second computer **without installing remote control software on the first computer.**

31. A method for providing on demand remote control of an application, comprising the steps of:

receiving a demand from a first computer indicating that a user at the first computer desires remote control over an application at a second computer;

in response to the demand, transmitting to the first computer a remote control module over a network,

executing said remote control module at said first computer to establish a remote control communication comprising input-output communications between a user interface at said first computer and an application at said second computer without installing remote control software on the first computer; *and*

the remote control module configured to execute on the first computer to enable input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module.

36. A method for providing on demand remote control of an application, comprising the steps of:

receiving a request from a first computer for remote control of an application at a second computer, the first computer system receiving and executing an on-demand remote control module enabling, input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module;

running the application on the second computer;

executing said remote control module at said first computer to establish a remote control communication comprising input-input communications between a user interface at said first computer and an application at said second computer without installing remote control software on the first computer; *and*

the second computer providing the first computer with remote control access to the application program.

41. A method for providing on demand remote control of an application, comprising the steps of:

receiving a request from a first computer for remote control of an application at a second computer;

in response to the request, transmitting a remote control module to the first computer operable for enabling input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module;

executing the remote control module at the first computer **to provide remote control over the application at the second computer without installing remote control software on the first computer;** *and*

establishing a communication during which the first computer remotely controls the application running on the second computer.

46. A method for providing on demand remote control of an application program, comprising the steps of:

receiving from a first computer a demand indicating that a user at the first computer desires remote control over an application program residing on a second computer;

in response to the demand, transmitting to the first computer a remote control module over a network;

the second computer running the application program and an associated application program user interface for controlling input-output communications with the application program;

the remote control module enabling input-output communications entered through local resources at the first computer to remotely control the application program residing on the second computer system without pre-installing remote control software on the first computer prior to receiving the remote control module; and

the first computer executing the remote control module to provide a user at the first computer with access and control over the application program running on the second computer to allow the user to experience the look and feel of the application program user interface and control features of the application program without installing remote control software on the first computer.

47. The method of claim 46 further comprising the steps of:

the first computer receiving input-output messages from the local resources at the first computer, displaying the input-output messages on the local resources at the first computer in association with the application program user interface, converting the input-output messages to a protocol suitable for transmission to the second computer, and transmitting the input-output messages to the second computer;

the second computer receiving the input-output messages from the first computer, converting the received input-output messages to a protocol suitable for the application program, and providing the input-output messages to the application program to cause the application program to operate in response to the input-output messages.

48. The method of claim 47 wherein:

the protocol suitable for transmission to the second computer comprises an HTTP protocol; and

the protocol suitable for the application program comprises operating system calls associated with an operating system running on the second computer.

49. The method of claim 47 further comprising the steps of:

the second computer converting input-output messages received from the application program to a protocol suitable for transmission to the first computer and transmitting the input-output messages to the first computer; and

the first computer receiving the input-output messages from the second computer, converting the input-output messages to a protocol suitable for the local resources at the first computer, and displaying the input-output messages in association with the application program user interface on the local resources at the first computer.

50. The method of claim 49 wherein:

the protocol suitable for transmission to the first computer comprises an HTTP protocol; and

the protocol suitable for the local resources at the first computer comprises operating system calls associated with an operating system running on the first computer.

51. The method of claim 46 further comprising the steps of:

the second computer storing in a cache memory attribute data received from the remote control module and retrieving a portion of the attribute data from the cache memory in response to an input-output message from the application program requesting the attribute data.

52. The method of claim 46, wherein:

the local resources at the second computer comprise a keyboard, mouse and monitor; and

the input-output communications entered through local resources at the first computer to remotely control the application program residing on the second computer system comprise mouse and keyboard commands.

53. The method of claim 46 wherein said remote control module is transported in an applet file.

54. The method of claim 53 wherein said remote control module is transported in response to activation of an applet tag of a HTML document.

55. The method of claim 46 wherein said remote display module is executed by an interpreter at said first computer.

56. The method of claim 21 wherein the input-output communicatons comprise user interface commands identifying keyboard and mouse commands.

57. The method of claim 31 wherein the input-output communications comprise user interface commands identifying keyboard and mouse commands.

58. A method for providing on demand remote control of an application comprising the steps of:

receiving a demand that a user at a first computer desires remote control over an application at a second computer;

in response to the demand, transmitting a remote control module to the first computer over a network, and

the remote control module enabling input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module;

wherein the remote control module can be interpreted by a browser.

59. The method of claim 31 wherein the remote control module can be interpreted by a browser.

60. A method for providing on demand remote control of an application, comprising the steps of:

receiving a demand from a first computer indicating that a user at the first computer desires remote control over an application at a second computer;

in response to the demand, transmitting to the first computer a remote control module over a network, and

the remote control module configured to execute on the first computer to enable input-output communications allowing the first computer to remotely control the application at the second computer system

without pre-installing remote control software at the first computer prior to receiving the remote control module;

wherein the remote control module is implemented in an interpretative language.

61. The method of claim 21 wherein the remote control module is an applet.

62. The method of claim 61 wherein the applet is a Java applet.

63. A method for providing on demand remote control of an application, comprising the steps of:

receiving a demand from a first computer indicating that a user at the first computer desires remote control over an application at a second computer;

in response to the demand, transmitting to the first computer a remote control module over a network, and

the remote control module configured to execute on the first computer to enable input-output communications allowing the first computer to remotely control the application at the second computer system without pre-installing remote control software at the first computer prior to receiving the remote control module;

wherein the remote control module is an applet.

64. The method of claim 63 wherein the applet is a Java applet.

65. The method of claim 21 wherein the remote control module can control at least two applications.

66. The method of claim 31 wherein the remote control module can control at least two applications.

67. The method of claim 21 wherein the remote control module automatically terminates at the conclusion of a remote control session.

68. The method of claim 31 wherein the remote control module automatically terminates at the conclusion of a remote control session.

69. The method of claim 46 wherein the remote control module automatically terminates at the conclusion of a remote control session.

70. The method of claim 21, wherein an operating system running on the first computer interacting with the remote control module is different from an operating system running on the second computer interacting with the application program.

71. The method of claim 31, wherein an operating system running on the first computer interacting with the remote control module is different from an operating system running on the second computer interacting with the application program.

72. The method of claim 46, wherein an operating system running on the first computer interacting with the remote control module is different from an operating system running on the second computer interacting with the application program.

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